

# CURRICULUM VITAE OF JAMES G. WETMUR

March 22, 1998

## Address:

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## Personal Information:

Date of Birth: July 1, 1941  
Birthplace: New Castle, PA

Married, 3 children  
Social Security Number: 205-32-0951

## Education:

B.S., Yale University, Chemistry, 1963  
Ph.D., California Institute of Technology, Chemistry, 1967    Thesis advisor: Norman Davidson

## Professional Experience:

Professor of Microbiology and Human Genetics, Mount Sinai School of Medicine, New York, NY, 1994-present.  
Visiting Scientist, Roche Molecular Systems, Alameda, CA, 1992  
Professor of Microbiology, Mount Sinai School of Medicine, New York, NY, 1983-present  
Associate Professor of Microbiology, Mount Sinai School of Medicine, New York, NY, 1974-1982  
Assistant Professor of Chemistry and Biochemistry, University of Illinois, Urbana, IL, 1969-1974  
Chief, Biochemistry Branch, U.S. Army Aeromedical Research Laboratory  
Fort Rucker, Alabama (Captain, U.S. Army), 1967-1969

## Honors and Service:

Eastman Kodak Prize in Chemistry, Caltech, 1967  
Career Scientist Award, Health Research Council of New York City, 1975  
Fellow, New York Academy of Sciences, 1985  
Invited Expert Analyst, *Chemtracts - Biochemistry and Molecular Biology*, 1990-1995  
DOE Site Visits: Hybridization Array Technologies at Argonne National Laboratory (1993, 1995)  
NIH Study Sections (Recent only):  
    Special: Molecular Genetics, SBIR: 1987-89; Genome: 1988, 1990; NCHGR: DNA Sequencing: 1992, 1998; Yeast Genome: 1996; NCI Program Projects: 1994, 1996  
    Site Visits: Genome: Affymetrix (1992, 1995), Genome Therapeutics (1993), Cold Spring Harbor (1993); NCI: Cornell (1994, 1996), Baylor Medical/Genometrix (1996), Temple/Penn/Molecular Dynamics (1998)  
    Chartered: Genome: 1992-1996

## Professional Activities:

**Memberships:** American Society for Biochemistry and Molecular Biology (Federation)  
American Chemical Society (Past section officer)  
New York Science and Technology Forum  
American Society of Human Genetics; American Society for Microbiology;  
The Human Genome Organisation; Sigma Xi

**Consulting:** Enzo Biochem, Incorporated, 1984-1991  
PolyProbe Research Program, 1992-present  
Roche Molecular Systems, Hoffmann La-Roche, 1993-present  
Cornell University Medical College, GenVec Oversight Committee, 1997-present

**Positions Held at the New York Academy of Sciences:**

Vice-President (Biological Sciences): 1986-88  
Member of the Board of Governors and Executive Committee of the Board, 1986-88  
Committee Chairman: Conferences, 1985-6; Publications (*Annals New York Acad. Sci.*), 1987-88

**Current Committee Assignments at Mount Sinai:**

Faculty Promotions  
Basic Sciences Computer Committee  
Chairman, Institutional Biological Safety Committee

**Civic Activities:**

Yale Alumni Schools Committee, 1976-present  
Town Club, Scarsdale, 1976-present; Member of Schools and Parks and Recreation Committees  
Voting Member, Administrative Committee of the Citizens' Nominating Committee,  
Union Free School District #1, Towns of Scarsdale and Mamaroneck, NY

**Teaching: (Complete courses or course director only; excludes seminar courses)**

**Microbiology:**

Microbiology and infection (medical school microbiology)  
Microbial and molecular biology  
Research methods for biomedical sciences

**Chemistry:**

Physical chemistry - for biologists  
Physical chemistry - quantum mechanics  
Physical chemistry of macromolecules  
Physical chemistry laboratory; Physical biochemistry laboratory

**Ph.D. Theses Directed (excludes current students): 13**

Physical Chemistry - 5; Biochemistry - 1; Microbiology - 6; Human Genetics - 1.

**Research Support (active support; annual direct costs only):**

P.I.: Thermostable proteins with DNA substrates, Roche Molecular Systems, Inc., 7/23/95-7/22/2000, \$52,000.  
P.I.: Enhanced PCR Fidelity and Specificity, NIH R21HG01365, 8/15/96-7/31/98, \$100,000.  
P.I.: Lead Toxicity and the ALA-Dehydratase polymorphism, NIH R01ES05046, 5/1/92-4/30/98, \$150,000.  
Co-P.I. (Philip J. Landrigan, P.I.) and Project Director, Project 7, Lead and organochlorines in New York City, NIH P42 ES07384, 5/1/95-3/31/2000, \$110,000.  
With Anne L. Golden, P.I., Reproductive toxicity and occupational lead exposure, ATSDR, CDC, 10/1/96-9/30/99, 5% salary plus fringe benefits.

## BIBLIOGRAPHY - JAMES G. WETMUR

### Caltech:

- Wetmur, J.G., Davidson, N., and Scaletti, J.V., Properties of DNA of bacteriophage N1, a DNA with reversible circularity. *Biochem. Biophys. Res. Commun.* **25**, 684-688 (1966).
- Wetmur, J.G., Studies of the kinetics of renaturation of DNA, Ph.D. Dissertation, California Institute of Technology, 1967.
- Wetmur, J.G. and Davidson, N., Kinetics of renaturation of DNA. *J. Mol. Biol.* **31**, 349-370 (1968).

### U.S. Army:

- Wetmur, J.G. and Wilson, C.R. Forms of closed circular DNA in rat liver during regeneration and following aminoazodye carcinogenesis, vol. AD-689451 [Chem. Abstr. **71**, 99828b]. U. S. Clearinghouse Fed. Sci. Tech. Inform., 7 pp, (1969).
- Shane, W.P., Wetmur, J.G., and Wilson, C.R. Temperature dependence of snake venom phospholipase A and related hemolysis, vol. AD-690800 [Chem. Abstr. **72**, 28477w, 1970]. U. S. Clearinghouse Fed. Sci. Tech. Inform., 8 pp, (1969).
- Wetmur, J.G. and Wilson, C.R. Automated column chromatographic analysis of deacylated phospholipids, vol. AD-695635 [Chem. Abstr. **72**, 87005p, 1970]. U. S. Clearinghouse Fed. Sci. Tech. Inform., 7 pp, (1969).

### University of Illinois:

- Wetmur, J.G., Excluded volume effects on the rate of renaturation of DNA. *Biopolymers* **10**, 601-613 (1971).
- Lee, C.H. and Wetmur, J.G., Independence of length and temperature effects on the rate of helix formation between complementary ribopolymers. *Biopolymers* **11**, 549-561 (1972).
- Lee, C.H. and Wetmur, J.G., On the kinetics of helix formation between complementary ribohomopolymers and deoxyribohomopolymers. *Biopolymers* **11**, 1485-1497 (1972).
- Hutton, J.R. and Wetmur, J.G., Renaturation of DNA in the presence of ethidium bromide. *Biopolymers* **11**, 2337-2348 (1972).
- Lee, C.H. and Wetmur, J.G., Thermodynamic and kinetic studies of the interconversion of linear and circular  $\lambda$ b<sub>2</sub>b<sub>3</sub>c DNA in the presence of purine and ribonuclease A. *Biochem.* **11**, 4595-5602 (1972).
- Lee, C.H. and Wetmur, J.G., Physical studies of chloroacetaldehyde labelled fluorescent DNA. *Biochem. Biophys. Res. Commun.* **50**, 879-885 (1973).
- Hutton, J.R. and Wetmur, J.G., The effect of chemical modification on the rate of renaturation of DNA. Deaminated and glyoxalated DNA. *Biochem.* **12**, 558-563 (1973).
- Lee, C.H., Chang, C.-T., and Wetmur, J.G., Induced circular dichroism of DNA-dye complexes. *Biopolymers* **12**, 1099-1122 (1973).
- Hutton, J.R. and Wetmur, J.G., Renaturation of  $\phi$ X174 DNA-RNA hybrid: RNA length effect and nucleation rate constant. *J. Mol. Biol.* **77**, 495-500 (1973).
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- Chang, C.-T., Miller, S.J., and Wetmur, J.G., Physical studies of N-acetoxy-N-2-acetylaminofluorene

- modified DNA. *Biochem.* **13**, 2142-2148 (1974).
- Chang, C.-T., Hain, T.C., Hutton, J.R., and Wetmur, J.G., The effects of microscopic viscosity on the rate of renaturation of DNA. *Biopolymers* **13**, 1847-1858 (1974).
- Orosz, J.M. and Wetmur, J.G., *In vitro* iodination of DNA: Maximizing iodination while minimizing degradation; use of buoyant density shifts for DNA-DNA hybrid isolation. *Biochem.* **13**, 5467-5473 (1974).
- Miller, S.J. and Wetmur, J.G., Determination of the rate of renaturation of DNA by fluorescence depolarization. *Biopolymers* **13**, 2545-2551 (1974).
- Miller, S.J. and Wetmur, J.G., Physical properties of endonuclease S1 digestion products of DNA renaturation intermediates. *Biopolymers* **14**, 309-317 (1975).

#### Mount Sinai School of Medicine:

- Wetmur, J.G., Acceleration of DNA renaturation rates. *Biopolymers* **14**, 2517-2524 (1975).
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- asymmetric PCR. *Nucleic Acids Res.* **19**, 2251-2259 (1991).
- Wetmur, J.G., DNA probes: Applications of the principles of nucleic acid hybridization. *Crit. Rev. Biochem. Mol. Biol.* **26**, 227-259 (1991).
- Wetmur, J.G. Analysis: Meisel, *et al.*, Type III restriction enzymes need two inversely oriented recognition sites for DNA cleavage [*Nature* **355**:467-469, 1992]. *Chemtracts - Biochem. Mol. Biol.* **3**, 166-168 (1992).
- Wetmur, J.G. Analysis: Jwang, *et al.*, Torsional stress generated by RecA protein during DNA strand exchange separates strands of a heterologous insert [Proc. Natl. Acad. Sci. USA **89**:7596-7580, 1992]. *Chemtracts - Biochem. Mol. Biol.* **3**, 384-386 (1992).
- Kaya, A.H., Plewinska, M., Wong, D.M., Desnick, R.J & Wetmur, J.G., Human  $\delta$ -aminolevulinic acid dehydratase gene: Structure and alternative splicing of the erythroid and housekeeping mRNAs. *Genomics* **19**, 242-248 (1994).
- Wetmur, J.G. Influence of the common human  $\delta$ -aminolevulinic acid dehydratase polymorphism on lead body burden. *Environ. Health Persp.* **102**, suppl. **3**, 215-219 (1994).
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- Wetmur, J.G. Analysis: Nakazawa, *et al.*, UV and skin cancer: Specific p53 gene mutation in normal skin as a biologically relevant exposure measurement [Proc. Natl. Acad. Sci. USA **91**:360-364, 1994]. *Chemtracts - Biochem. Mol. Biol.* **5**, 114-116 (1994).
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- Wetmur, J.G., Wong, D.M., Ortiz, B., Tong, J., Reichert, F. & Gelfand, D.H., Cloning, sequencing and expression of RecA proteins from three distantly related thermophilic eubacteria. *J. Biol. Chem.* **265**, 25928-25935 (1994).
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- Todd, A.C., Wetmur, J.G., Moline, J.H., Godbold, J.H., Levin, S.M. & Landrigan, P.J., Unravelling the chronic toxicity of lead: an essential priority for environmental health. *Environ. Health Persp.* **104**, suppl. **1**, 141-146 (1996).
- Tong, J. & Wetmur, J.G. Cloning, sequencing, expression, and characterization of RuvB proteins from two distantly related thermophilic eubacteria. *J. Bacteriol.* **178**, 2695-2700 (1996).
- Bobovnikova, Y., Kim, S.-Y. & Wetmur, J.G. Insert selection by *Bam*HI-methyltransferase protection in P1 phage-based cloning. *Gene* **170**, 39-44 (1996).
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- Bergdahl, I.A., Grubb, A., Schütz, A., Desnick, R.J., Wetmur, J.G., Sassa, S. & Skerfving, S. Lead binding to  $\delta$ -aminolevulinic acid dehydratase (ALAD) in human erythrocytes. *Pharmacology and Toxicology* **81**, 153-158 (1997).
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- bioaccumulation. *Fundamental and Applied Toxicology* **35**, 84-90 (1997).
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- Rao, H.G.V, Rosenfeld, A & Wetmur, J.G. (1998) *Methanococcus jannaschii* flap endonuclease: expression, purification and substrate requirements. *J. Bacteriol.* Submitted.

#### **PATENTS ISSUED:**

- Stavrianopolous, J., Rabbani, E., Abrams, S.B. & Wetmur, J.G., Analyte detection by means of energy transfer [Chem. Abstr. **108**, 201342k (1988)]. U.S. patent 4,868,103 (9/19/89).
- Desnick, R.J. & Wetmur, J.G., Determining susceptibility to lead poisoning by detection of polymorphisms in the  $\delta$ -amino levulinate dehydratase gene. [Chem. Abst. **118**, 206954c (1993)]. U.S. patent 5,639,607 (6/17/97).

#### **PATENTS PENDING:**

- Brakel, C.L., Wetmur, J.G., and Quartin, R.S., Nuclear resistance in oligonucleotides with modified bases in phosphodiester bonds.
- Wetmur, J.G., Quartin, R.S., and Engelhardt, D., Branch migration of oligo- and polynucleotides and their stabilization with displacer sequences.
- Wetmur, J.G., cloning and expression of thermostable MutS genes and proteins and uses thereof.

#### **RESEARCH PRESENTATIONS AND LECTURES, 12/91 - present**

##### **Hybridization and Branch Migration**

- 91: First International Workshop of Sequencing by Hybridization, Moscow, Russia: Opening speaker on Nucleic Acid Hybridization
- 92: Mount Sinai Department of Biochemistry: Seminar on Branch Capture Reactions
- 92: University of California, San Francisco, Department of Laboratory Medicine: Seminar on Branch Capture Reactions
- 92: Affymax Research Institute, Palo Alto, CA: Seminar on Branch Capture Reactions
- 92: Roche Molecular Systems, Alameda, CA: Seminar on Branch Capture Reactions
- 93: Second International Workshop of Sequencing by Hybridization, The Woodlands, TX: Speaker on Nucleic Acid Hybridization
- 94: New Horizons in Gene Amplification Technologies, San Francisco, CA: Speaker on Nucleic Acid Hybridization
- 94: Abbott Laboratories, Abbott Park, IL: Seminar on Nucleic Acid Hybridization
- 95: Abbott Laboratories, Abbott Park, IL: Four hour Course on Nucleic Acid Hybridization
- 97: Rockefeller University, Center for Studies in Physics and Biology, New York, NY: Seminar on DNA Hybridization
- 97: DNA-Based Computer Conference, Philadelphia, PA: Opening Speaker on Nucleic Acid Hybridization

## **Nucleic Acid Enzymology**

- 92: Nucleic Acids Gordon Research Conference: Presentation on Class IIS Restriction Endonucleases
- 93: Roche Molecular Systems, Alameda CA: Seminar on Thermophilic RecA Proteins
- 93: Genetic Recombination and Genome Rearrangements, FASEB, Copper Mountain CO: Presentation on Thermophilic RecA Proteins
- 93: Genome Mapping and Sequencing, Cold Spring Harbor, NY: Presentation on Insert Selection by Methylase Protection
- 93: Thermophiles '93, Hamilton, New Zealand: Speaker on Thermophilic RecA Proteins
- 94: American Society for Microbiology Annual Meeting, Las Vegas, NV: Presentation on Thermophilic RecA Proteins
- 94: Roche Molecular Systems, Alameda, CA: Seminar on Thermophilic Accessory Proteins
- 94: UMDNJ Department of Biochemistry, Newark, NJ: Seminar on Thermophilic RecA Proteins
- 95: Repair and Processing of DNA Damage (Keystone Meeting): Presentation on RuvB Helicase
- 95: Roche Molecular Systems, Alameda CA: Seminar on Allele-Specific PCR (7/95)
- 95: Roche Molecular Systems, Alameda CA: Update on Allele-Specific PCR (12/95)
- 96: Integrated Genetics, Framingham, MA: Seminar on Allele-Specific PCR
- 96: Thermophiles '96 Biannual Meeting: Presentation on MutS proteins
- 97: Mount Sinai Department of Human Genetics: Seminar of Mismatch Repair Proteins of Thermophiles
- 97: Roche Molecular Systems, Alameda CA: Seminar on Thermostable Mismatch Repair Proteins and Flap Endonucleases

## **ALAD ( $\delta$ -Aminolevulinate Dehydratase) and Lead**

- 92: American Society of Human Genetics Annual Meeting, San Francisco, CA: Presentation on Human ALAD Genetics
- 92: Mount Sinai Department of Community Medicine: Seminar on ALAD and Lead
- 92: New York University Institute of Environmental Medicine: Seminar on ALAD and Lead
- 93: Molecular Mechanisms of Metal Toxicity and Carcinogenesis, Madonna di Campiglio, Italy: Speaker on ALAD and Lead
- 96: American Society of Human Genetics Annual Meeting, San Francisco, CA: Presentation on Human ALAD Genetics and Lead
- 97: Bioethics Symposium, Dearborn, MI: Speaker on Genetic Influences on Lead Poisoning
- 98: American Society of Toxicology Annual Meeting, Seattle, WA: Speaker on Genetic Influences on Lead Poisoning